

# Traceability Beyond the Hype



## At a Glance:

- The ability to trace the flow of lots and individual components used in manufacturing operations is vital to industries that must comply with strict quality mandates and governmental regulations.
- Comprehensive technology solutions offer value in this area when they are specifically geared to high-precision manufacturers.
- This paper showcases the traceability features needed to continuously improve quality and maintain compliance with mandates.

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## A Hard Truth

It is alarming to note that U.S. manufacturers spend over \$25 billion every year on product warranty claims. (Source: IDC).

These same industry analysts also report that warranty costs in the automotive industry exceed \$9 billion per year.

Direct warranty costs are not the only consideration. Indirect costs must take into account the significant loss of sales due to negative publicity.

**“Traceability:** tracing goods and processes backward along the supply chain and forward along the distribution chain based on identifying characteristics.”

## The Role of Regulation

Increasingly complex government and industry regulations play a big part in the rising costs of warranty. Government regulations include:

The TREAD Act: The Transportation Recall Enhancement, Accountability and Documentation (TREAD) Act requires that vehicle manufacturers report to the National Highway Traffic Safety Administration (NHTSA) when they conduct a safety recall or other safety campaign in a foreign country.

The TREAD regulation mandates that vehicle manufacturers report information about defects, reports of injury or death related to their products, as well as other relevant data in order to comply with “Early Warning” requirements. The “Early Warning” requirement is the heart of the TREAD Act, enabling the NHTSA to collect data, notice trends, and warn consumers of potential defects in vehicles.

The TREAD Act assigns criminal liability when a vehicle manufacturer intentionally violates the reporting requirements if a safety-related defect has subsequently caused death or serious bodily injury. There are a number of other smaller provisions which mostly address manufacturers of vehicle tires and guidance to the NHTSA on reporting data.

Aerospace Regulation: Lot traceability, document control and audit trails are

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essential for compliance with the International Traffic in Arms Regulations (ITAR). AS 9100 Rev. C requires traceability, audit trails, advanced document controls and record storage. Defense Contract Audit Agency (DCAA) compliance requires fully auditable, traceable accounting procedures linked to operational and manufacturing systems. These are just a few of the myriad of regulations and compliance requirements aerospace and defense manufacturers must comply with to successfully win and complete projects and programs.

The bottom line is that consumers, customers, government agencies, and courts expect increasingly higher quality standards and levels of corporate responsibility. It's up to the manufacturer and supply chain to track their processes and business information so critical safety-related decisions and operations related to warranty issues can be properly analyzed.

For automotive and aerospace manufacturers and suppliers, adhering to warranty-related reporting requirements can make all the difference.

## The Role of Technology

Today's information technology solutions create electronic databases of decisions (e.g., safety vs. cost tradeoffs in design) that can be tapped by lawyers looking for evidence, or by the manufacturing companies themselves when faced with warranty issues.

This means that information technology systems have become powerful tools for manufacturers to isolate quality, warranty, or safety issues and minimize disruption to production.

This is the concept of "traceability," which is defined as the capability for tracing goods backward along the supply chain and forward along the distribution chain based on identifying characteristics.

## Short- and Long-Term Benefits of Traceability

The short-term goals of the traceability function are to identify products impacted by a defect after customer delivery to reconcile the error, whether by return, waiver, or cost recovery. It also becomes the fundamental documentation in the case of a recall.

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Traceability works to minimize affected products that must be recalled when a manufacturing flaw is found by identifying only the specific serial numbers that were built with the faulty component/material or by the faulty process. Without a robust traceability system that can limit a company's exposure in this way, it is typical to recall an entire production run to ensure the affected product is contained.

More important, the proactive, long-term result of traceability is to identify defects prior to customer delivery to reduce in-process costs and exposure to the customer as well as eliminate the need and costs of a recall including the potential damage to the company's brand.

## Eliminating Recalls

In essence, parts traceability information technology solutions eliminate recalls in the first place by providing real-time reports on the machines, components, stations, shifts, and operators to catch the defective product and processes before the product is shipped.

Manufacturers are wise to implement a complete solution that provides real-time traceability features to accurately track individual containers and/or pieces as they flow through the entire manufacturing value chain. These solutions must be able to not just provide historical information—they must make it easy to extract data related to production, inspection, genealogy, and usage.

## Traceability Best Practices

As a way to showcase a best practice approach in traceability, the experience of a regional tier-two bearing supplier serves as a fitting example.

A large US-based tier-one automotive parts manufacturer began searching for a new component supplier for a unitized center bearing (UCB) component used in its customers' cars and trucks.

“For this bearing supplier, parts traceability results in defect-free components.”

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The previous UCB supplier had serious quality problems, which exposed shortcomings in its inventory control and increased the potential of future warranty costs.

The issue's root cause was a rubber bushing which sometimes became too hard and worked to reduce the UCB's dampening ability and allowed normal driveshaft vibrations to be transmitted into the passenger compartment.

The previous bearing supplier only had the ability to label each part with just a Julian date, and so it was assumed that all parts marked with that date were suspect.

The limitation in this situation was that there was no traceability to ensure the tier one's parts produced the days before and after shouldn't be contained as well. In fact, the tier-one manufacturer rejected a total of three days' worth of parts every time a defect was found.

## Traceability as a Competitive Advantage

A strategic technology solution let the bearing supplier easily manage part serialization, barcoding, component tracking, quality management, SPC/ measurement data, and full part traceability.

The Plex Manufacturing Cloud provided the bearing supplier not only the production date/time, but also the machines and operators that made it, the in-process measurement data, the supplier and serial numbers of the components that went into it, the steel chemistry of the raw material, and much more.

For this bearing supplier, the combined capabilities of process control and traceability have allowed the company not only to produce the UCB without major problems, but also to make multiple design changes that have radically improved the part's performance.

The company gained these benefits from a technology that offered much more than just a quality documentation system. Plex was designed specifically for manufacturers to increase process repeatability, reduce variation, increase production throughput, and reduce defects.

The system provided the bearing tier-two supplier with an automatic, paperless, and real-time linkage between part dimensions, FMEA, control plan, process

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instructions, checksheets, inspection data collection, and SPC, along with part layouts, PPAPs, gage studies, and capability studies.

## The Plex Manufacturing Cloud Competitive Advantage

As revealed in the best practices case study included here, Plex helps the manufacturing enterprise dramatically reduce the cost and effort of improved part quality.

Comprehensive traceability features accurately track individual containers and/or pieces as they flow through the manufacturing process and the entire supply chain, and can quickly isolate problems with pinpoint precision. Detailed historical information tracks receipt, movement, production, inspection, genealogy, and customer shipments.

Capabilities include serialized container and individual part tracking, built-in barcode printing and scanning, RFID, direct part marking, and detailed container-to-container traceability both upstream and downstream from any point in the process and/or shipped parts.

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### About Plex

Plex is the Manufacturing Cloud, delivering industry-leading ERP and manufacturing automation to more than 600 companies across process and discrete industries. Plex pioneered cloud solutions for the shop floor, connecting suppliers, machines, people, systems, and customers with capabilities that are easy to configure, deliver continuous innovation, and reduce IT costs. With insight that starts on the production line, Plex helps companies see and understand every aspect of their business ecosystems, enabling them to lead in ever-changing markets. Learn more at [www.plex.com](http://www.plex.com)

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